Controlled Subsurface Drainage Pilot Project

Featured Project

A conservation drainage project in Kandiyohi County is demonstrating a win-win solution to common tradeoffs in crop production – draining fields in the spring and fall enables crops to be planted and harvested, but draining fields throughout the growing season can take water away from crops when they need it. Subsurface drainage can also impact water quality by carrying nitrate and soluble phosphorus into water bodies.

The system in Kandiyohi County contains a water control structure that allows for manipulation of the water table in the affected part of the field. The structure holds back water in the drainage tile and soil profile, except in the spring and fall when more drainage is needed. This pilot project will provide producers in the Middle Fork Crow River watershed and around the region with an opportunity to learn about the benefits of drainage water management by seeing the system in action.

The project also has a research component. Riser pipes were installed along the tile line with the water control structure and on another tile line to house monitoring equipment. Collecting data from each tile line will demonstrate the affect of subsurface drainage water management. The long-term goal is to promote broader acceptance of these practices by demonstrating how conservation drainage maintains or improves crop yields while protecting water quality.

Pictured: An existing drainage tile line was retrofitted with a water control structure, flow monitoring equipment, and precipitation gauge.

Location: Middle Fork Crow River watershed; North of Atwater in Kandiyohi County

Partners: Middle Fork Crow River Watershed District; BWSR; University of Minnesota Southwest Research and Outreach Center; Kandiyohi County Soil and Water Conservation District; USDA Natural Resources Conservation Service (NRCS); Minn. Department of Agriculture; Kandiyohi County ditch authority

BWSR Featured Project

Project Timeline: The project timeline is June 30, 2010 to December 31, 2011. Research began in the fall of 2009 to identify an appropriate field and willing land owner to conduct a pilot project. A field was selected and the control structure and monitoring equipment was installed in the summer of 2010. Monitoring will continue through 2011. The control structure will remain in place for a minimum of 10 years to allow the land owner to continue management of the water table in that part of the field.

Funding Sources: BWSR Conservation Drainage grant (through the Legacy Amendment), Middle Fork Crow River Watershed District, local landowner.

Project costs: Water control structures - $10,696; Effectiveness monitoring and evaluation - $3,530; Education and Outreach - $890; Grant administration - $486

Keys to Success: Several conservation practices are available to reduce nutrient and sediment loading from agriculture to receiving waters. However, many of them require the removal of land from production, which can affect a producer's bottom line and therefore inhibit the acceptance of these practices. Drainage water management is a "win-win" conservation practice that may increase crop yields while reducing nutrient export from tiled fields. This pilot project will provide producers in the Middle Fork Crow River watershed and around the region with an opportunity to learn about the benefits of drainage water management as well as see a system in action.

BWSR role: BWSR provided conservation drainage grant funds and associated grant oversight, as well as connection to knowledgeable people to assist with project design and monitoring equipment challenges.

For more information: http://www.mfcrow.org/programs/conservation_drainage.html